

WHAT IS CLAIMED IS:

1. A semiconductor photocathode emitting electrons in response to an incidence of infrared radiation, comprising:

5 a semiconductor substrate made of GaSb;

a light absorbing layer made of  $\text{InAs}_{(1-x)}\text{Sb}_x$ ,  
where,  $0 < x < 1$ ; and

a first compound semiconductor layer having wider energy band gap than that of said light  
10 absorbing layer, said first compound semiconductor layer including Al,

wherein said first compound semiconductor layer is formed between said semiconductor substrate and said light absorbing layer.

15 2. The semiconductor photocathode according to Claim 1, further comprises a second compound semiconductor layer provided so as to sandwich said light absorbing layer together with said first compound semiconductor layer.

20 3. The semiconductor photocathode according to Claim 2, wherein both said first and second compound semiconductor layers are made of  $\text{Al}_y\text{Ga}_{(1-y)}\text{Sb}$ , where,  $0 < y < 1$ .

25 4. The semiconductor photocathode according to Claim 2, wherein both said first and second compound semiconductor layers are made of  $\text{Al}_y\text{Ga}_{(1-y)}\text{As}_z\text{Sb}_{(1-z)}$ ,

where,  $0 < y < 1$ , and  $0 < z < 1$ .

5        5. The semiconductor photocathode according to Claim 2, wherein both the first and second compound semiconductor layer comprise a superlattice layer formed by a stack of alternate layers of AlSb and GaSb.

6. The semiconductor photocathode according to Claim 3 or 4, wherein  $y$  is set to be in a range equal to or greater than 0.19 to less than 1.0.

10       7. A photoelectric tube comprising the semiconductor photocathode according to any one of Claims 1 to 5; and

15       an anode related to said semiconductor photocathode, wherein said semiconductor photocathode and said anode are enclosed in a vacuum vessel.